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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/014,899	12/14/2001	Loic Brunel	217148US2	4199
22850 7590 04/27/2007 OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER CORRIELUS, JEAN B	
			ART UNIT	PAPER NUMBER
			2611	
SHORTENED STATUTORY PERIOD OF RESPONSE		NOTIFICATION DATE	DELIVERY MODE	
3 MONTHS		04/27/2007	ELECTRONIC	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Notice of this Office communication was sent electronically on the above-indicated "Notification Date" and has a shortened statutory period for reply of 3 MONTHS from 04/27/2007.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/014,899

Applicant(s)

BRUNEL, LOIC

Examiner

Jean B. Corrielus

Art Unit

2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 March 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,8,9,11-13,15 and 16 is/are rejected.
- 7) ☒ Claim(s) 3-7,10 and 14 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The finality of the last office action has been withdrawn in view of the following new ground of rejection. In addition, the office communication, dated 4/12/07, was sent in error and therefore has been vacated.
2. Applicant's response has overcome the objection to the abstract.

Claim Objections

3. Claim 12 is objected to because of the following informalities: Claim 12, last line, "at the input of" should be replaced by "before" since the filtering step does not include an input. In addition, "to the received signal" should be inserted in line 3, after "users" so as to be consistent with similar changes made to claim 11. Note that any claim whose base claim is objected is likewise objected.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 1, 2, 8, 9, 13, 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's background art fig. 2 and description of fig. 2 at page 6 of the specification in view of Garth US patent No. 6,259,743.

As per claim 1, Applicant's background art fig. 2 and description of fig. 2 at page 6 of the specification disclose a method and apparatus comprising the step of detecting within said received signal a plurality of possible symbols transmitted by or for a plurality of k users, each of the plurality of k symbols belonging to a modulation constellation and being subject to spectral spreading by a spreading sequence see page 6, lines 24-33, said detecting step comprising: filtering a received signal to produce complex vectors see page, the complex vectors include (decompose into) real vector and imaginary vector see col6, lines 24-27; searching the symbols closest to the real and imaginary vectors corresponding to the constellation(lattice) of symbols see page 6, lines 29-31 and estimating the transmitted symbols from the components of said closest neighbors of the real and imaginary vectors see page 6, lines 31-33. However, as noted by applicant at page 9, first full paragraph of the comment filed 3/26/07, the admitted prior art does not search **separately** for the closest neighbor of the real and imaginary vectors. Garth teaches a receiving apparatus fig. 6 comprising a filter 100 for filtering a received signal and for supplying a complex signal (vector) having a real and imaginary components see fig. 6 and **searching separately** using slicers 130 and 135 for the closest neighbor to the real vector and the closest neighbor to the imaginary vector within a respective real and imaginary lattice of points see col. 4, lines 25-39. Given that fact, it would have been obvious to one skill in the art to implement such a teaching in

applicant's admitted prior art so as to enhance signal processing. Since the separate searching would have reduced signal processing since processing would have been performed in parallel.

As per claim 2, applicant's background art fig. 2 and description of fig. 2 at page 6 of the specification and Garth disclose every feature of the claimed invention but do not explicitly teach using a spreading sequence consisting of real multiples of the same complex coefficient. However, the use of a spreading sequence consisting of real multiples of the same complex coefficient is old and well known in the art. Given that, it would have been obvious to one skill in the art to modify applicant's background art fig. 2 and description of fig. 2 at page 6 of the specification and Garth in such a way as to use of a spreading sequence consisting of real multiples of the same complex coefficient in order to be able to generate only desired PN sequence necessary to scramble the information signal.

As per claims 8 and 9, Applicant's background art fig. 2 and description of fig. 2 at page 6 of the specification further teaches prior to the searching step, the real vector/Or imaginary vector is subjected to a matrix processing see page 6, lines 5-18.

As per claim 13, the symbols for k users are synchronously transmitted and the lattice of points is of dimension k . see page 2, lines 12-24.

As per claim 15, the method is implemented using fig. 2 (processor).

As per claim 16 the detection device is embodied in a receiver is use in CDMA see page 1, line 5.

6. Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's background art fig. 2 and description of fig. 2 at page 6 of the specification in view of Garth US patent No. 6,259,743 and further in view of Huang et al US Patent no. 6,301,293.

As per claims 11 and 12, as applied to claim 1 applicant's background art fig. 2 and description of fig. 2 at page 6 of the specification and Garth disclose every feature of the claimed invention but do not explicitly teach the further limitations of eliminating other users' contributions from to the received signal corresponding to transmitted symbols already estimated at the output/input of the filtering step. Huang teaches the further limitations of eliminating other users' contributions from to the received signal corresponding to transmitted symbols already estimated see fig. 9. Given that fact, it would have been obvious to one skill in the art to incorporate such a teaching in applicant's background art fig. 2 and description of fig. 2 at page 6 of the specification and Garth so as to ensure that the reconstructed signal is as close as possible to the original signal. Note that whether interference cancellation is carried prior or after filtering the end result would have been the same namely eliminate interference from other users and therefore would have been obvious to one of ordinary skill in the art.

Allowable Subject Matter

7. Claims 3-7,10 and 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments


8. Applicant's arguments with respect to claims 1, 2, 8, 9, 11-13, 15 and 16 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jean B. Corrielus whose telephone number is 571-272-3020.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Jean B Corrielus
Primary Examiner
Art Unit 2611

4-23-07